

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A method for determining link level performance in a communication system, comprising:

determining, in a first cellular network element, an instantaneous detection metric for one or more given wireless access channel coefficients representing a plurality of wireless access channel realizations, the determining of the instantaneous detection metric being a function of a spatial processing result from subjecting the access channel to spatial processing in order to simulate actual system performance, wherein spatial processing involves the processing of multiple antenna clusters, the clusters including multiple antennas per cluster, to determine an angle-of-arrival with appropriate antenna weights;

selecting, in a second cellular network element, a conditional detection probability based on the determined detection metric; and

calculating, in a third cellular network element, a link level performance result based on the selected conditional detection probability.

2. (Previously Presented) The method of claim 1, wherein

calculating a link level performance result includes calculating a detection indicator value that represents a detection success or a detection failure of the access channel.

3. (Previously Presented) The method of claim 1, wherein the conditional detection probability is selected without link-level processing requiring repeated system simulations of the communication system.

4. (Original) The method of claim 1, wherein selecting includes accessing a look-up table to select a conditional detection probability corresponding to the determined detection metric and a given threshold value.

5. (Previously Presented) The method of claim 4, wherein
the given threshold value is calculated in advance as a function of a probability of an erroneous detection when a signal to be received over a given wireless access channel realization is not present.

6. (Original) The method of claim 2, wherein
calculating the detection indicator value includes:
comparing the selected conditional detection probability to a randomly-generated number, and
outputting the detection indicator value if the selected conditional detection probability equals or exceeds the randomly-generated number.

7. (Original) The method of claim 2, wherein the determining, accessing and calculating are repeated for a plurality of wireless access channel realizations, the method further comprising:

averaging the detection indicator value over the plurality of wireless access channel realizations;

wherein calculating a link level performance result includes determining an unconditional detection probability for all wireless access channel realizations based on the average detection indicator value.

8. (Previously Presented) The method of claim 1, wherein

the detection metric is additionally a function of one or more of transmit power, a wireless channel coefficient of the access channel, and a temporal processing result from subjecting the access channel to temporal processing.

9. (Currently Amended) A method for determining random access channel (RACH) preamble detection performance in a communication system, comprising:

determining, in a first cellular network element, for each given RACH preamble of a plurality of wireless channel realizations, a conditional detection probability, the conditional detection probability determined without link-level processing requiring repeated system simulations of the communication system;

calculating, in a second cellular network element, an unconditional detection probability for determining RACH preamble detection performance as an average detection probability over the plurality of wireless channel realizations; and

determining, in a third cellular network element, an instantaneous detection metric for a given wireless channel realization that is a function of a spatial processing result from subjecting the RACH preamble to spatial processing in order to simulate actual system performance, wherein spatial processing involves the processing of

multiple antenna clusters, the clusters including multiple antennas per cluster, to determine an angle-of-arrival with appropriate antenna weights.

10. (Original) The method of claim 9, wherein calculating an unconditional detection probability includes calculating a detection indicator value that represents a detection success or a detection failure of a RACH preamble.

11. (Original) The method of claim 10, wherein

calculating the detection indicator value includes:

comparing the selected conditional detection probability to a randomly-generated number, and

outputting the detection indicator value if the selected conditional detection probability equals or exceeds the randomly-generated number.

12. (Original) The method of claim 11, wherein

calculating the detection indicator value is repeated for each of the plurality of wireless channel realizations, and

calculating the unconditional detection probability further comprises averaging the detection indicator value over the plurality of wireless channel realizations, the unconditional detection probability determined based on the average detection indicator value.

13. (Previously Presented) The method of claim 9, wherein determining a conditional detection probability includes:

accessing a look-up table to select a conditional detection probability corresponding to the determined detection metric.

14. (Previously Presented) The method of claim 13, wherein the detection metric is additionally a function of one or more of transmit power, a wireless channel coefficient of the given RACH preamble, and a temporal processing result from subjecting the RACH preamble to temporal processing.

15. (Original) The method of claim 14, wherein

the given threshold is calculated in advance as a function of a probability of an erroneous detection of the given RACH preamble.

16. (New) The method of claim 1, wherein the first cellular network element, the second cellular network element, and the third cellular network element are the same cellular network element.

17. (New) The method of claim 9, wherein the first cellular network element, the second cellular network element, and the third cellular network element are the same cellular network element.

<End of Claims Listing>